CHAPTER 8 - Overview of Project Development

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SECTION 1 - General

Project Development Process

The project development process spans that period of time that begins with feasibility studies and ends with the completion of construction. The development process is tied to the legal requirements of environmental laws and regulations; it melds engineering requirements and Caltrans' management approval steps with the environmental process.

Planning

Considerable planning is done prior to project development. This results in the development of a planning concept and scope identifying the type or mode of the facility as well as other features relating to the location and length of the project, including the number of lanes and general interchange and intersection spacing. (See Chapter 1 for definitions of "planning concept" and "planning scope".) This planning work focuses on identifying and clarifying the specific transportation system problem, and then looking for practical solutions. Project goals, objectives, and preliminary scoping are established so that preliminary feasibility studies can begin. A Feasibility Planning Estimate may be prepared to validate the proposed project's objectives. (For more information, see Chapter 20, Section 2, "Project Development Cost Estimates".)

The determination of the appropriate transportation mode or modes should occur as part of the planning process for major urban improvements. This results from a Corridor Study and a Major Investment Study.

Project development follows system and regional planning or follows the various management systems and master plans that identify the need for a particular project. The planning concept and scope are reviewed, and updated if appropriate, to define the design concept and scope, including basic design features. (See Chapter 9, Article 2, for definitions of "design concept" and "design scope", as well as "basic design features".

Purpose & Need

A good statement of the proposed project's purpose & need should flow out of system planning. (For more information on the system planning process, see Chapter 1, Section 4.)

A project must satisfy a clearly defined need and purpose. It must meet State, regional, and local goals and objectives. For capacity-increasing projects, this includes air quality goals.

Alternative solutions are evaluated that avoid or reduce significant adverse environmental impacts. The alternative selected is the one that causes the least environmental damage while still serving the essential transportation need.

Decision to Prepare Project Initiation Document

Prior to committing district resources for the preparation of a project initiation document, a district may prepare a one or two-page decision document discussing the feasibility of initiating a project. This decision document may be called a "Project Proposal Report", a "Project Initiation Proposal", etc.

The decision document usually includes a strip map and a feasibility planning estimate. It is an internal district document; each district determines its own requirements for initiating projects, subject to various required considerations including the Regional Agency's PSR priority listing.

Project Initiation

The project development process is initiated by the designation of a Project Manager (PM). The PM secures an Expenditure Authorization (Chapter 8, Section 3) and then begins preparing a Project Work Plan (see *Project Management Procedures Manual*). The initial Project Work Plan will usually cover only the project initiation process in any detail; following approval of the project initiation document, further development of the Work Plan will take place.

The PM determines the composition of the Project Development Team (PDT) by determining which internal functional disciplines and external representatives are required to plan and carry out the development of the project (see Chapter 8, Section 4). At its first meeting, the PDT determines the tentative Project Development Category (See Chapter 8, Section 5). The Project Manager uses the Project Development Category to prepare the Project Work Plan.

Special Considerations

The following types of projects need concept studies and review prior to inclusion in the Project Delivery Schedule or the programming document:

- Special Funded State highway projects, including locally funded, sales tax funded, or privately funded projects affecting State highways (See Chapter 2, Section 6, for more information.)

- Projects for new public road connections to freeways or expressways, requested by local agencies (See Chapter 27.)

The various project initiation processes and documents are described in Chapter 9.

Programming Precedes Formal Project Studies

Before formal project studies can commence for State-funded projects, the project initiation document must be approved and the project must be programmed in a State programming document (See Chapter 4, "Programming") for Special Funded Projects, an executed Cooperative Agreement or Highway Improvement Agreement must exist (see Chapter 2, Section 5).

Exceptions

Formal project studies may begin earlier when an approved project initiation document contains specific language granting exception to the normal procedures.

In addition, long-lead-time projects may commence prior to programming if they meet all seven steps outlined below. The CTC and Caltrans limit the number of such projects to an absolute minimum, consistent with availability of funds and project development staff available to Caltrans. CTC verifies that all of the following conditions are met.

1. Due to project complexity, estimated project development time exceeds seven years.

2. There are demonstrable practical reasons why certain phases of the project development work should be done early.

3. Substantial cost savings will be realized as a result of early start on the project development work.

4. Work is limited to what is necessary to make the project eligible for inclusion in a subsequent programming document.

5. The work does not interfere with or delay work on projects included in an adopted programming document.

6. Funding for the work is provided in the Budget Act.

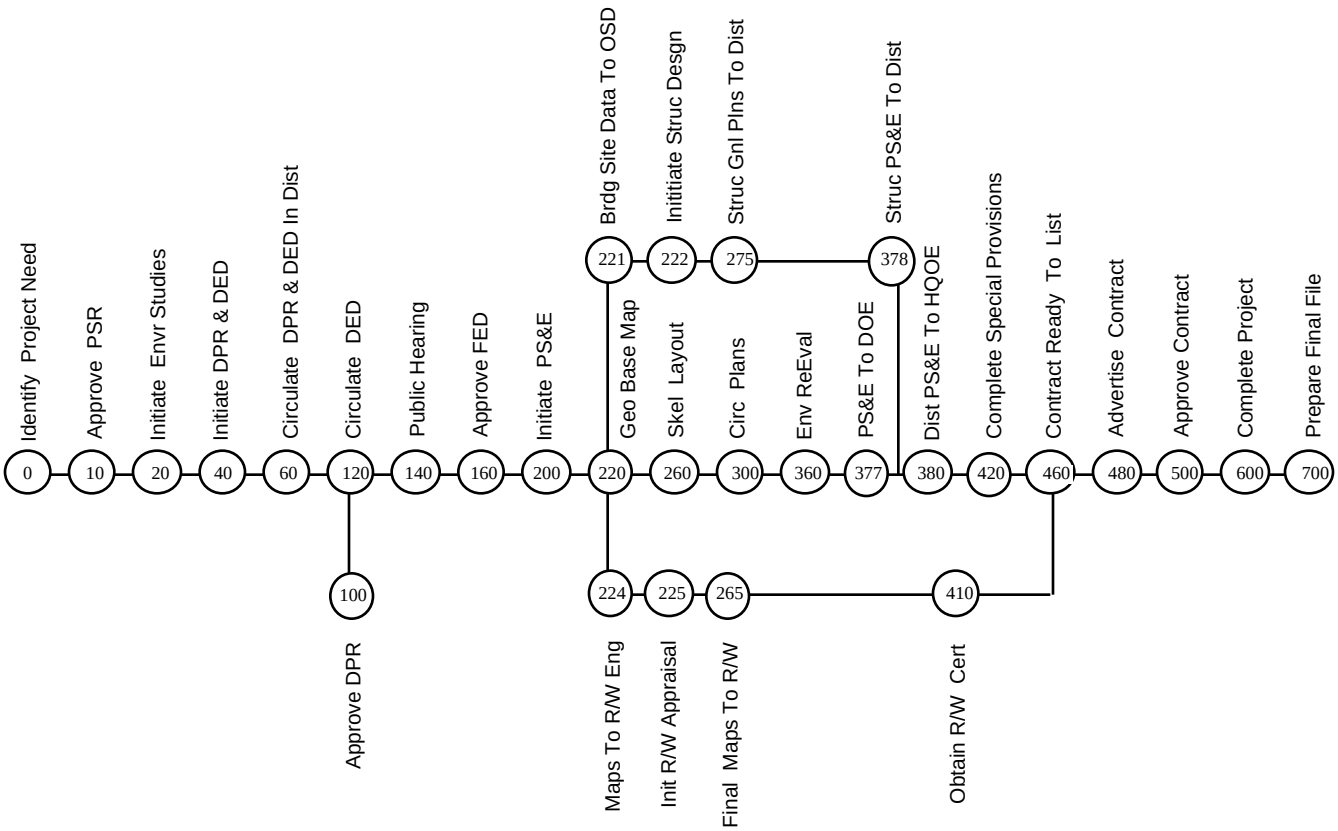
7. A request to perform the project development work is submitted to the CTC, along with supporting documents.

Project Delivery Schedules

Schedules for all major projects are listed in the Project Delivery Schedules. This Delivery Schedule is developed by the Office of Statewide Project Management and Control in the Project Management Program. Note that it includes all major projects, not just those listed in the STIP.

SECTION 2 - Project Development Overview Using PYPSCAN Milestones

This section provides an overview of the project development process with respect to the Major PYPSCAN Milestones illustrated in the flowchart below.



Each of the following chapters in Part 2 describes major events or phases in the project development process and is introduced by a brief explanation and flowchart illustrating where it fits in the sequence of PYPSCAN Milestones.

The individual tasks required to complete a project as it proceeds through the project development process are described in the *Project Development Workflow Tasks Manual*. The PDWTM tasks are based on these same PYPSCAN milestones. Chapter 5 in the PDPM provides specific details on the PYPSCAN system.

In addition to the PDPM and *Project Development Workflow Tasks Manual*, other manuals are needed for reference throughout the project development process and are listed as a general reference.

The discussion in this section is a general guide through the project development process. This guide, for a specific project, needs to be modified depending on the specific circumstances of the project. To determine the details for completing a

specific project, consult other chapters in this manual, the *Project Development Workflow Tasks Manual*, the other manuals referenced in Chapter 1, Section 2, and applicable district procedures.

Prior to Milestone 000

System and Regional Transportation Planning

The planning concept and scope for major transportation improvements are developed during the system planning process. The Regional Transportation Plan (RTP) presents the proposed improvements for the region after completing required Major Investment Studies (MIS), air quality conformity analysis, and a preliminary environmental evaluation. This is the first phase for screening project alternatives and it is documented in the CEQA environmental document that the Regional Transportation Planning Agency (RTPA) prepares for the RTP. Management Systems, Master Plans, and prioritizing processes identify other project needs.

Chapter 1, Section 4, and Chapter 3, Section 1, of the PDPM describe system and regional transportation planning in further detail. In addition, the following Caltrans manuals and guidance should be referred to: *System Planning Guidelines; Regional Transportation Plan Guidelines*; and *Highway Capacity Manual*.

Milestone 000 to Milestone 020

Determine Project Alternatives and Approve Project Study Report (PSR)

The Project Manager begins the project development process by preparing a project workplan for the proposed project and by coordinating the designation of a Project Development Team (PDT). The Project Engineer obtains preliminary data for the project engineering work. Projects with potential for significant environmental impacts requiring formal consideration of alternatives, usually are initiated by documentation in a Project Study Report (PSR). However, other project initiation processes are available, depending upon the project type and specifics. Many of these optional processes provide project approval at this point — which allows the project to bypass subsequent milestones and proceed directly to Milestone 200 and the initiation of project design.

Prior to PSR approval (Milestone 010), sufficient information is needed to determine if project alternatives should be formally considered when the environmental document is prepared. If formal consideration is required, additional studies will be necessary to fully document the purpose and need and to identify the design concept and scope of the full range of possible project alternatives. A deliberate evaluation of the full range of project alternatives is required, to assure that alternate and multimode options are considered, that feasible avoidance alternatives are identified (if required), and that the costs of alternatives are evaluated. From these alternatives, the viable alternatives are studied in detail and are identified and documented in the PSR. One of the viable project alternatives is selected for programming the project's cost, design concept and scope, and schedule.

Following PSR approval and programming, and prior to initiating the environmental studies (Milestone 020), geometric plans and R/W maps should be prepared in greater detail to identify the areas of potential effects.

Chapter 9 of this manual provides details on the project development policies and procedures relating to project alternatives, PSRs, and other project initiation documents. Other information on project development tasks required between Milestones 000 to 020 may be found in the *Project Development Workflow Tasks Manual.* The following Caltrans documents should be referred to: *Environmental Handbook; Cooperative Agreement Manual; Procedures Manual for Special-Funded State Highway Projects*; *Encroachments Permit Manual*; *Project Management Procedures Manual*; *Highway Design Manual; Transportation Management Plan Guidelines*; *Major Damage Restoration Coordinator's Handbook; Photogrammetric Products and Services;* and *Project Candidate List Development Manual.*

Milestone 020 to Milestone 140

Complete Detailed Environmental & Engineering Studies for Project Alternatives (as needed)

After reviewing the project alternatives, and prior to Milestone 040 (initiation of Draft Project Report & Draft environmental document), impact mitigation measures are identified. Upon completion of the appropriate environmental studies and identification of potential significant adverse impacts, the need for additional alternatives should be determined.

When the environmental studies for the viable alternatives are complete, the Draft Project Report is finalized, approved (Milestone 100), and the Draft environmental document is circulated to the public (Milestone 120). A preferred alternative is not recommended at the Draft environmental document stage. However, if presented, the discussion of the preferred alternative should document factors considered in its selection.

The least environmentally damaging, practicable alternative (LEDPA) must be identified when a draft EIR is prepared. If the "no-project" alternative is identified as the LEDPA, the Draft EIR must identify a LEDPA from among the "build" alternatives.

Chapter 10 describes the project development policies and procedures relating to the completion of environmental and engineering studies for project alternatives. For the project development tasks required between Milestones 020 to 140, see the *Project Development Workflow Tasks Manual*. In addition, the following Caltrans manuals and guidance should be referred to: *Environmental Handbook; Project Management Procedures Manual; Highway Design Manual;* and *Surveys Manual.*

Milestone 140 to Milestone 160

Conduct Public Hearing (as needed)

Following circulation of the Draft environmental document (the public review period), a public hearing is held (Milestone 140). After analyzing the public hearing comments, a preferred Alternative is normally selected, which allows the

preparation and approval of the Final environmental document (Milestone 160) which is attached to the PR.

Chapter 11 describes the project development policies and procedures relating to a public hearing. For the project development tasks required between Milestones 140 to 160, see the *Project Development Workflow Tasks Manual*. In addition, the following Caltrans manuals and guidance should be referred to: *Environmental Handbook; Project Management Procedures Manual;* and *Caltrans Media Handbook* .

Milestone 160 to Milestone 200

Approve the Preferred Project Alternative

Selection of the Preferred Alternative authorizes the completion of the PR for project approval. When an EIS has been prepared, an Environmentally Preferred Alternative is identified in the Record of Decision (ROD) that is published in the Federal Register.

Chapter 12 describes the project development policies and procedures for selecting and approving the Preferred Alternative and for project approvals. For the project development tasks required between Milestones 160 to 200, see the *Project Development Workflow Tasks Manual.* In addition, the following Caltrans manuals and guidance should be referred to: *Environmental Handbook* and *Project Management Procedures Manual.*

Milestone 200 to Milestone 260

Initiate Project Design

Once the preferred alternative has been chosen and the project has been approved, project design (preparation of PS&E) can be initiated. Data from the Materials Report, survey information, Preliminary Drainage Report, geometric base maps and other sources are used by the PE for project design. Skeleton layouts and typical cross sections are developed (Milestone 260). Quantity calculations are started for contract items. Structure Site Submittals, Utility Plans for the utility companies, and Right of Way Maps are sent to the appropriate individuals for use in preparing their design contributions to the project.

Chapter 14, Section 1, of the PDPM describes the project development policies and procedures for initiating the design of a project. For the project development tasks required between Milestones 200 to 260, see the *Project Development Workflow Tasks Manual*. In addition, the following Caltrans manuals and guidance should be referred to: *Highway Design Manual; CADD Users Manual; Drafting and Plans Manual; Standard Plans; Standard Specifications; Plans, Specifications and Estimates Guide; Project Management Procedures Manual; Bridge Manuals;* and *Right of Way Manual.*

Milestone 260 to Milestone 300

Conduct Detailed Project Design

During this time frame, design details, plans, quantity calculations, and contract specifications for the project are developed by the involved functional units. The PE consolidates the work of functional units into a draft set of plans and specifications. Once all of the project data are consolidated, the project plans are circulated for review and comment in the District (Milestone 300).

Chapter 14, Section 2, of the PDPM describes the project development policies and procedures relating to project design. For the project development tasks required between Milestones 260 to 300, see the *Project Development Workflow Tasks Manual.* In addition, the following Caltrans manuals and guidance should be referred to: *Highway Design Manual; CADD Users Manual; Drafting and Plans Manual; Traffic Manual; High Occupancy Vehicle (HOV) Guidelines*; *Ramp Meter Design Guidelines; Standard Plans; Standard Specifications; Plans, Specifications and Estimates Guide;* and *Project Management Procedures Manual.*

Milestone 300 to Milestone 380

Complete Project Design

When all of the district comments are returned to the PE, the final design phase for the project begins. These comments are considered, a Safety Review is conducted, and the project Plans, Specifications and Estimate (PS&E) are finalized. An environmental reevaluation should be conducted to confirm that the project design is within the framework of the project approval document, which includes the environmental document for the project. The project PS&E is then submitted to the District Office Engineer Unit. After combining with Structures PS&E, it is sent to the Office of Office Engineer of the Engineering Service Center (Milestone 380).

Chapter 14, Section 3, of the PDPM describes the project development policies and procedures for the completion of project design. For the project development tasks required between Milestones 300 to 380, see the *Project Development Workflow Tasks Manual*. In addition, the following Caltrans manuals and guidance should be referred to: *Highway Design Manual; Environmental Handbook; CADD Users Manual; Drafting and Plans Manual; Standard Plans; Standard Specifications; Plans, Specifications and Estimates Guide;* and *Project Management Procedures Manual.*

Milestone 380 to Milestone 500

Prepare and Advertise Project Contract

Once the project reaches this stage, the design work should be complete. However, some additional details need to be completed prior to advertising the contract. Right of Way Certification and a CTC Funds Request approval must be obtained. The final project documents and bid package are then assembled to prepare the project for advertising. After the project has been advertised and the bids have been opened, the PE reviews the bidding process and recommends that the contract be approved (Milestone 500) and awarded, if appropriate.

Chapter 14, Section 3, and Chapter 15, Section 1, of the PDPM describes the project development policies and procedures concerning the preparation, advertisement and award of the project contract. For the project development tasks required between Milestones 380 to 500, see the *Project Development Workflow Tasks Manual*. In addition, the following Caltrans manuals and guidance should be referred to: *Plans, Specifications and Estimates Guide; Construction Manual;* and *Project Management Procedures Manual.*

Milestone 500 to Milestone 700

Conduct and Complete Construction Project

Contract approval authorizes construction of the project. The project is constructed and the contract is administered according to the PS&E that was developed by the PE. However, if any design changes are required during the construction of the project, the PE will be consulted and usually requested to prepare the engineering details and calculations required to adequately construct the project changes. The Resident Engineer for the project prepares the Final Construction Project Records when the project is complete (Milestone 600). The Final Contract Estimate, Project History File and the As-Built Plans for the project are completed before the project is complete (Milestone 700).

Chapter 15, Sections 2 and 3, of the PDPM describe the project development policies and procedures for project construction. For the project development tasks required between Milestones 500 to 700, see the *Project Development Workflow Tasks Manual*. In addition, the following Caltrans manuals and guidance should be referred to: *Construction Manual* and *Project Management Procedures Manual.*

SECTION 3 - Expenditure Authorizations

General

Project Development costs for personnel and support are captured by charging to the appropriate Expenditure Authorization (EA) and Subjob, with work activity breakdown details captured by Activity Codes, Management Systems Activities (MSA) codes, and Special Designation codes. EAs shall be issued for each project study prior to undertaking any work.

A general description of EAs is listed below. Further details may be found in the *Coding Manual, Volume 1, Chapter 11*.

EA Groups

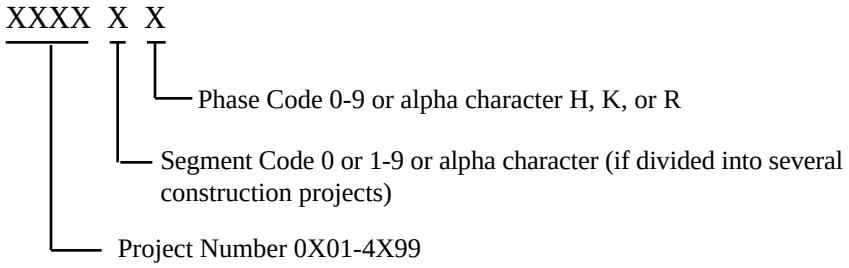
Charges for owner-operator work, project overhead, and project-direct work are accounted for by the establishment of an EA in the Expenditure Authorization Table. A six-digit code identifies the EA. EA numbers are assigned to the following basic groups; with "X" representing either numeric or alpha characters:

0X00XX - 4X99XX = Multiphase Projects
5X0001 - 5X9999 = Maintenance
600001 - 699999, RXXXXX, TXXXXX, CXXXXX = Special Projects
700001 - 899999 = Prepayment and Receipt
900001 - 999999 = Single Phase Expenditure Authorizations

Refer to the *Coding Manual, Volume 2*, for details on EA codes and procedures.

Project Coding

The District Project Control Unit assigns an EA number to each project. Projects are coded using multiphase EA numbers, as shown below:



Project Number:

The first four digits of the EA number identify the basic project. The Project Number is assigned at the beginning of the Project Initiation process and is retained throughout the life of the project, involving all phases of work.

Segment Code:

Large projects may ultimately be segmented into several construction projects. The fifth digit of the EA number is used to identify individual construction projects derived from the basic project. For example, the beginning portion of a route would be segment "1", the ninth segment would be segment "9". EA number "244351" would be the fifth construction project. If a project is not segmented, the numeral "0" is used in the fifth position of the EA.

Phase Code:

The sixth digit of the EA is used to identify the phase of a project. The numbers "0" through "9" or the alpha characters "H", "K", or "R" are used to identify the functional phase within the work segment. The phases are described below:

CODE	PHASE
K	Begin Work Through Project Initiation Document Approval
0	Environmental Review and Project Approval (PR)
1	Design (PS&E)
2	Right of Way - Operations (Capital Outlay Support only)
3	Construction Engineering
4	Major Contract Capital Payments
5	Minor Contract Capital Payments
6	Vacant
7/8	Miscellaneous or Cooperative Agreements
9	Right of Way - Capital Outlay (Normal)
H	Right of Way - Hardship or Protection Capital
R	Right of Way - Rental Property Management - Support

Capital Outlay Support Phases

The following paragraphs describe capital outlay support activities that may be charged to the various phases of a multi-phase EA.

Phase K – Project Initiation Document

- All direct labor and operating expenses incurred in developing the Project Initiation Document (or equivalent).

- The costs of preliminary investigations (up to the point that it is decided that a PSR [or equivalent] is required) should be charged to the owner-operator EA 910230. Such charges require County and Route coding in the Special Designation block.

- Indirect charges (organizational management and supervision) for directing overall Project Initiation activities and personnel should be charged to the appropriate overhead EA.

Phase 0 (zero) – Project Report (PR) Environmental Document

- All direct labor and operating expenses incurred in developing the PR — including the costs associated with producing required documents for compliance with environmental law.

- Indirect charges (organizational management and supervision) for directing overall PR activities and personnel should be charged to the appropriate overhead EA.

Phase 1 – Design

- All direct labor and operating expenses incurred from the date of the approval of the PR until the project is advertised — plus subsequent necessary re-design costs.

- Indirect charges (organizational management and supervision) for directing design activities and personnel should be charged to the appropriate overhead EA.

Phase 2 – Right of Way Operations

- All direct labor and operating expenses incurred by right of way operations for capital-outlay projects only. These operations include right of way engineering, appraisals, acquisitions, condemnation, utility relocations, relocation assistance, and clearances of improvements. Costs of Real Property services are not included.

- Indirect charges (organizational management and supervision) for directing overall capital-outlay right of way operations should be charged to the appropriate overhead EA.

Phase 3 – Construction Engineering

- All direct labor and operating expenses incurred in administering construction contracts — generally from the date of advertisement (and earlier if there is no Federal funding involvement) to the date of work completion and preparation of the final contract pay estimates. Such costs include construction staking and the Resident Engineer's office expense incurred.

- Indirect charges (organizational management and supervision) for directing overall construction engineering activities and personnel should be charged to the appropriate overhead EA.

EAs for General Supervision

General supervision is charged to overhead EAs. They are grouped by major work function, as follows:

- Capital Project Management

- Project Development
- Right of Way
- Construction Engineering.

See the *Single Phase EA Descriptions* provided to Resource Managers to determine the current EAs.

Approval Authority

District Directors have been delegated authority to approve and charge to EAs as follows:

- K-phase EAs may be approved "as needed."

- 0-Phase EAs may be approved for all Minor projects and for Major projects included in an approved programming document.

- Charges should not be made to any EA until the District Project Control Unit authorizes use of the EA, because charges made prior to this can create errors and take extensive time and expense to correct.

- Where federal funds will be involved, approval of federal participation (FNM-76) is required before charging to an EA, because expenditures incurred prior to federal approval are not reimbursable by FHWA.

- Charges should not be made to a 1-phase EA or a 2-Phase EA prior to obtaining project approval, because design work done prior to project approval can impact federal fund participation.

Early Assignment of EAs

Districts can assign 0-phase EAs whenever a project has been authorized by the CTC and is included in an approved programming document (e.g., the STIP).

Districts can also obtain 0-phase EAs for projects that have not been authorized by the CTC or Caltrans and are not in an approved programming document. To do so, the EA must be approved by the District Director. When the adopted programming document includes the project, the EA is activated without review, in the Caltrans accounting system (TRAMS) by the Accounting Service Center.

Charging Practices

Successful project management requires effective and precise exchange of information between all the personnel involved throughout all phases of a project. It is essential that individuals performing project work all charge their time in a consistent manner. This consistency is aided by the use of standards which provide a precisely defined structure used by all involved personnel to plan the project, exchange information, and organize reporting. Caltrans has developed three project management standards in the form of breakdown structures, breaking down Caltrans capital outlay support process by work done, resource need and organization structure.

The data generated by the use of these standards provides information that is consistent statewide and is needed to:

- improve charging practices
- develop project workplans
- accurately report and forecast results
- develop standardized reports providing meaningful comparisons
- monitor performance in meeting commitments
- provide the basis for continuous improvement

Work Breakdown Structure (WBS)

Personnel support charges made to project development EAs are to include all project-oriented activities from initiation of studies through close-out of the construction project. These activities are known collectively as the WBS. The WBS is simply a formal and systematic way of defining and identifying the component parts of a project and the work to be done on them. It is a product oriented structure that organizes and defines the total Caltrans Capital Outlay project work. See the *Guide to Caltrans Capital Outlay Support Work Breakdown Structure* for a detailed description of the WBS and its use. A detailed listing of the activities is also included in the *Coding Manual*, Volume 1, Chapter 6. Many of the WBS activities used in project development work also correspond to the individual tasks described in the *Project Development Workflow Tasks Manual.* See that manual for details.

Resource Breakdown Structure (RBS)

In conjunction with the WBS, the RBS is used to record time expenditures. The statewide standardized RBS codes define personnel resources along functional (not organizational) lines and corresponds to the standard cost center coding structure. The RBS is used to identify functionally who is charging the project EA. See the *Briefing Package on Capital Outlay Support Work Breakdown Structure and Resource Breakdown Structure* for more information.

Organizational Breakdown Structure (OBS)

In conjunction with the WBS and the RBS, the OBS is also used to record time expenditures. The OBS identifies specific organizational units and the structure is specific to the district or service center.

Other Accounting Codes

Other accounting codes used for project development activities, include Subjob Number, Special Designation, Management System Activities (MSA) Code, and Object Code. For further information, refer to the *Coding Manual*, Volume 1.

SECTION 4 - Project Development Team

General

The Project Development Team (PDT) is directly involved with the implementation of a transportation project. The original PDT concept was developed in response to the National Environmental Policy Act (NEPA) of 1969 which requires public agencies to "utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment".

Interdisciplinary Approach

The interdisciplinary approach uses interaction of different disciplines in the planning, developing, and evaluating alternatives. Caltrans uses a formal PDT meeting approach for projects in Project Development Categories 1, 2A, 3 and 4A. An informal approach without requiring attendance at meetings is usually used for Categories 2B, 4B and 5. (See Chapter 8, Section 5, for the definitions of Project Development Categories.)

The PDT advises and assists the Project Manager (PM) in directing the course of studies, makes recommendations to the PM and district management and works to carry out the project workplan. Members of the PDT participate in major meetings, public hearings, and community involvement. The PDT also serves as the nucleus for a Value Analysis Team (see Chapter 19). The PDT is responsible for the conduct of studies and the accumulation of data throughout project development to PS&E.

PDT Functions

The primary functions of the PDT are listed below:

- To assess, at the outset, available preliminary engineering data to confirm that the study should continue. The PM requests the Transportation Planning Unit to validate previous systems planning recommendations for transportation improvements. The PDT participates in this reevaluation.

- To determine logical project limits.

- To determine the need for local, regional, State or federal agency members on the PDT, or the need for citizen advisory committees.

- To recommend studies, timetables, alternatives, type of environmental documentation, and the feasibility of project impact mitigation measures.

- To ensure thorough analysis of the social, economic, environmental (including visual and aesthetic) and engineering aspects of the project. The PDT calls upon representatives of various disciplines as needed.

- To initiate a program of community involvement to encourage citizen and local agency participation throughout the study, including public meetings and the public hearing. (See Chapter 22, "Community Involvement".)

- To ensure that State and federal requirements for project development studies have been met.

- To use information in reports (PSR, DPR-DED, etc.) together with input from the public hearing when recommending a Preferred Alternative to District Management for project approval.

- To ensure design of a quality project that can be safely and efficiently constructed and maintained within scope and budget and on schedule.

- To ensure that right of way is acquired and cleared on schedule.

- To provide advice during project construction on construction activities, contract changes and mitigation and right of way commitments.

- To ensure that project history is preserved by documenting project decisions and utilizing the Uniform File System (see Chapter 7).

PDT Team Leader Selection

The PDT Team Leader is typically designated by the District Division Chief for Program/Project Management. If the Team Leader is to be from another functional unit, the appropriate functional District Division Chief will designate the Team Leader. The person selected to be the Team Leader will also be the Project Manager (PM). Project assignments are based on project complexity and the ability, skill level, background, experience, past performance and existing workload of the PM.

The person selected to be the Team Leader (the PM) can be from any of the functional areas. Selection is based on the professional skills required to perform the planning and alternatives analysis that is specific to the assignments for that PDT. The Team Leader should have an overall understanding of the project development process, be able to manage a team, and be able to work effectively with communities, groups, and the staff of local agencies.

Formation of the PDT, selection of the team leader (the PM), and all subsequent modifications to the team must be documented in the project file. (See Chapter 7.)

PDT Meetings

PDT meetings should be held as necessary. Regularly scheduled meetings assist in maintaining group dynamics and communication. More meetings are probably necessary during initial studies, with need decreasing during the technical studies,

and increasing again during completion and analysis of results prior to making specific recommendations for the Draft Environmental Document. PDT members should attend meetings when their involvement is necessary.

Meeting Minutes

Minutes of team meetings are prepared and placed in the project file to document decisions. The detail of minutes varies according to the purpose of the meeting.

PDT Formation

Before starting project studies, the core of the PDT is formed for all projects, regardless of size or type of funding. The core PDT guides preliminary studies until the project is defined, which then determines the Project Development Category and the project development process requirements. At a minimum, a PDT is composed of the Project Manager, a representative of the regional transportation planning agency (if involved), and representatives from District Design, Environmental, Traffic, Safety, Surveys, Construction, and Maintenance Units, and the Right of Way Branch. The program manager and/or program advisor should also be considered.

Note: This manual uses the term "Design Unit" to refer to the district functional unit primarily responsible for the development of engineering design features of the project. This includes those units responsible for monitoring or reviewing State-highway-project engineering design features that are developed by outside entities or that are directly contracted out.

The PDT should make the most efficient use of member's time. For instance, a PDT may be formed to handle all safety and operational improvement projects. This PDT should be able to act through individual review of reports, by Team Leader (PM) telephone contact, or by having one meeting to cover several projects at one time.

Representatives from Safety, Construction, Surveys, Traffic and Maintenance are included for all projects to ensure that appropriate consideration is given to design features that limit exposure of employees, contractor personnel, and the traveling public to traffic during construction, maintenance, and all other normal operations.

Full or Part-Time

Team members may be full-time or part-time, depending on the magnitude of the impacts or the fields in which they specialize.

Additional PDT Members

The selection of additional team members depends on the scope and complexity of the proposed project. The interdisciplinary skills of the district, Headquarters, FHWA, and local and regional agencies are requested as needed to ensure that engineering, social, economic, and environmental aspects are adequately assessed, and reasonable evaluations and decisions are made.

On locally funded projects, representatives from the project sponsor should be included on the PDT, as appropriate. The Caltrans PM should be provided a list of

names from the project sponsor indicating the external participants they would like as PDT members (typically their PM and functional specialists or consultants). The Caltrans PM will then determine the appropriate composition of internal functional disciplines to complete the PDT.

The California Highway Patrol (CHP) Division Commander should be requested to assign a representative whenever the project could have an impact on CHP enforcement of public safety. Example projects include: striping right or left shoulders as auxiliary lanes, narrowing shoulders or lanes, striping any section of freeway or expressway for high occupancy vehicle (HOV) operation, noise barriers adjacent to shoulders, ramp meters, weigh stations, or paving a truck brake check area at the summit of a grade.

If significant utility investigation and relocation are involved, a representative of the Right of Way Utilities Unit may be used on the PDT.

For a project with extensive structure involvement, a representative of the Office of Structure Design should be on the PDT to assist in development and analysis of alternatives.

To ensure that aesthetics, visual impacts, conservation and management of roadside vegetation, and site planning are appropriately addressed, the District Landscape Architect (LA) or Project LA should be a member of the PDT for all projects which involve or affect planting, access and safe working conditions for vegetation management, roadside rest areas, noise barriers, and scenic highways; also the opportunity to participate on all other types of projects should be offered.

For projects with noise barriers or unique structures, a bridge architect should be considered for membership on the PDT to assist in development of architectural treatments. Assistance in the selection should be requested from the Engineering Service Center, Division of Structures, Office of Structure Design.

In addition, existing advisory groups established by local agencies should be consulted to ensure due consideration of aesthetic issues. Examples of such groups include: Architectural Review Boards, Design Review Committees, Community Advisory Boards, etc. Where such groups do not exist, consult the local agency as to the appropriate method for obtaining citizen participation on aesthetic issues.

The District Community Involvement Coordinator or Public Information Officer should be invited to participate on the PDT, as appropriate, to assist in developing an appropriate public participation and citizen involvement program. (See Chapter 22, "Community Involvement".)

Additional members may be selected from, but are not limited to, the following:

- Public members: may represent a particular expertise, geographic area, or affected group, etc.

- Local and Regional Agencies: When a proposed Caltrans project affects local and regional agencies, members of their staff should be included on the PDT.

- FHWA: The FHWA should be considered for team membership on non-exempt major federal-aid projects or projects that need coordination between federal agencies.

- Legal: Any legal problem, existing or anticipated, requires a representative from the Legal Division. Requests should be directed to the appropriate legal office.

- Ride Sharing: For major projects, the PDT consults with the District Ride Sharing Coordinator and may include the Coordinator on the team.

- Consultants: When consultants have been retained by Caltrans to provide specialized technical skills unavailable within Caltrans, they should participate on the PDT as necessary.

Representatives from District Real Property Asset Management are normally not members of the PDT, but should be invited to the PDT meetings. The District Asset Manager will attend Team meetings on those projects with potential for multiple use or special uses of right of way.

The PD Coordinator and the Environmental Coordinator (from the Environmental Program), while usually not official members of the PDT, should be called upon as needed to provide liaison between the District and Caltrans Headquarters Units and FHWA.

Caltrans Advisory Committees

On projects that may potentially have environmental impacts, Advisory Committees may be used to obtain semi-formal, specialized community interaction. They serve as adjunct committees to the PDT. Committee types and typical roles are described as follows:

- A committee of elected or appointed officials provide overall policy guidance and direction.

- A committee of professional staff members of State, regional, or local agencies provide advice on technical aspects of studies being proposed or conducted.

- A committee of citizens provide representative views of special interests or community concerns.

Example of a Caltrans Advisory Committee

An example of an advisory committee might be an Aesthetic Advisory Committee composed of representatives from the local community's architectural review board, design review committee, other interested advisory boards, etc. and individual citizens.

Appointment of Caltrans Advisory Committee Members

When a timely study is needed, and when project funding appears to be available, advisory committees may be appointed by the local government. Such a committee is responsible to the appointing local government. The local government should be encouraged to appoint members that represent a broad spectrum of community interest, including those of the physically challenged and minorities. The local government should also devote adequate staff time to the committee. A subcommittee can be appointed for specific phases, such as traffic studies, analysis of project alternatives, etc.

Functions of a Caltrans Advisory Committee

Advisory committees, if used properly, can help to identify problems and clarify key issues. They are not and should not be considered decision-making bodies. They can be used to:

- Test public acceptance of the project
- Check the appropriateness of problem solutions
- Build a constituency for the project
- Reduce conflict between opposing interests

Any PDT contemplating use of an advisory committee should develop a written charter for the committee. The charter should indicate that the advisory committee's role is to provide advice to the PDT. The PDT should always consider this advice. Ignoring the advice risks creating a hostile relationship between the PDT and the advisory committee.

Advisory committees may attempt to assume a role beyond their role described in the charter. If this happens, it may be necessary to have the committee review its charter and refocus on its role and purpose. See Chapter 22, Article 8, for more information on Caltrans Citizen Advisory Committees.

Need to Develop Working Relationship

When using an advisory committee, a close working relationship should be developed with the chair and members individually. Controversies and differences should be informally resolved (one-on-one) so that the advisory committee operates as smoothly as possible. An action contrary to the advice given by the committee may reflect badly on the project or compromise Caltrans' future relationship with the whole community.

Proper Use of Caltrans Advisory Committees

Advisory committees should be used properly. For instance, an advisory committee should not be used to inform the public of project activities and plans. A more practical method to inform the public of project activities, plans and schedules is to use a project newsletter or a strong media program. See Chapter 22, Articles 9 and 11, for more details on providing the public project information.

SECTION 5 - Project Development Categories

General

It is recognized that all projects are not of the same magnitude, nor will they have similar effects due to differing geographic location, population densities, and other unique characteristics. The project development process must provide a methodology to address these economic, social, environmental, and transportation differences. It must also address applicable federal and State legal requirements.

Similar Projects Equal Similar Process

Project Development Categories have been established to assure that project-related differences and State and federal requirements are addressed in the project development process. Each category consists of groups of projects having similar characteristics and therefore similar development procedures. The following characteristics were selected for categorizing highway projects:

1. Whether or not there is access control
2. Whether or not the project is on new alignment
3. Whether or not substantial new right of way is required
4. Whether or not there is substantial increase in traffic capacity
5. Whether or not the project is initiated by, and is under the jurisdiction of, a local agency

Category Descriptions

By definition, Categories 1 through 4 apply only to State highways; Categories 5 and 6 apply to either State or local highways; Category 7 is limited to local highways.

Category 1 Projects

Projects requiring access control, new right of way, adoption of a route location by the CTC, and Freeway Agreements.

Examples: New freeways, expressways, and controlled access highways on new alignment — conversion of conventional highways (with no access control) to freeways — expressways or controlled access highways.

Category 2 Projects

Projects that require a route location adoption by the CTC, and new right of way, but do not require access control or freeway agreements.

Examples: New conventional highways or realignments of conventional highways.

For purposes of determining whether or not an initial Project Development Team (PDT) meeting will be scheduled, Category 2 projects will be informally classified as "2A" or "2B". The proper classification will be determined by the PDT. Guidelines for these classifications are not specific, but would generally be described as below:

2A Projects:

A major project which would normally be one of substantial realignment or providing a substantial increase in traffic capacity. Also, the project would be one of particular significance physically or environmentally, or may be located in an area of critical concern.

2B Projects:

A minor project which would not meet any of the requirements for a major project. Examples include minor safety curve corrections, temporary connections, and other small realignments requiring a route adoption.

Category 3 Projects

Projects on previously constructed access controlled routes requiring a new or revised freeway agreement, but not a route adoption. New right of way may or may not be required. This category does not apply to the subsequent stages of multistage projects. A Category 3 project may be Categorically Exempt.

Examples: New or revised interchanges — new connections — conversion of expressway to freeway — widening an existing expressway, freeway, or controlled access highway, if they involve changes to local roads.

Category 4 Projects

Projects that do not require a location adoption or a Freeway Agreement and do not meet the criteria of Categories 5 or 6.

Because a wide variety of projects will be classified as Category 4, a further classification is made into 4A projects and 4B projects. The purpose of this distinction is to make an early tentative identification of projects whose potential impacts are most likely to be of interest or concern to regional and local jurisdictions .

4A Projects:

Projects requiring substantial new right of way or substantially increasing traffic capacity.

Examples: Widening conventional highway — addition of freeway lanes — interchange reconstruction not requiring a revised freeway agreement — separate safety roadside rest areas

4B Projects:

Projects that do not require substantial new right of way and do not substantially increase traffic capacity.

Examples: Projects that could probably be Category 5 projects except for the fact that they require a Negative Declaration rather than being Categorically Exempt under CEQA.

Category 5 Projects

Projects of minimal economic, social, or environmental significance. These projects would include those Categorically Exempt under CEQA. The *Environmental Handbook* contains a complete listing of Categorical Exemptions, along with guidelines for their applicability to a project.

Category 6 Projects

Projects urgently needed because of a national emergency, natural disaster, catastrophic failure, or immediate threat to life or property. Caution should be exercised for projects lasting over 30 days that have potential Section 106 (National Historic Preservation Act) involvement.

Even though there are no specified procedures for State-administered emergency restorative work, projects should involve interested local agencies when practicable. For major permanent replacement work involving studies of alternative locations, development of plans, right of way acquisition, betterments, etc., the procedures of the appropriate project category will apply, unless otherwise approved by the FHWA.

Category 7 Projects

Federal-aid projects initiated by local agencies on highways under their jurisdiction, not classified as Category 5 or 6.

Category Assignments

The assignment of a particular category is usually a PDT function, but the responsibility rests with the District Director, or in the case of locally initiated projects, with the local agency.

As further data is gathered, the project category assignment is subject to change. Input into the determination will be provided by both the Design and Environmental Units.

As soon as the project category assignment is made, a comment should be entered in the next Status of Projects in the "Remarks" column.

It is possible that different project alternatives will call for different project categories; for example, a new alignment alternative would be Category 1 or 2, whereas a "fix-the existing" alternative for the same study might be Category 4A or

4B. In these cases, the highest-order category will be selected to assure that recycling of the process will not be required later should the higher-order project be selected. The category assignment is always subject to change as project alternatives are added or dropped. However, dropping down in order should only be done after very careful consideration.

Matrix to Project Planning Steps

The relationship between the project category and the key steps in the project planning portion of the project development process are shown on Figure 1. This Figure summarizes the requirements for each Caltrans project category as stated in other chapters of this Part of this manual, and relates them to the various program types. In addition, Figure 2 relates the various program codes to the different types of project initiation and project approval documents.

FIGURE 1 - Project Development Categories Matrixed to Key Project Planning Steps

KEY PROJECT PLANNING STEPS	PROJECT DEVELOPMENT CATEGORY [7]							
	1	2		3	4		5	6
		A	B		A	B		
Designate Project Manager (Chapter 8 Section 1)	YES	YES	YES	YES	YES	YES	YES	YES
Develop Project Work Plan (Chapter 8 Section 1)	YES	YES	YES	YES	YES	YES	YES	YES
Project Development Team (Chapter 8 Section 1)	Formal	Formal	Formal	Formal	Formal	Informal [1]	Informal [1]	NO
Preliminary Environmental Evaluation (Chapter 10 Section 2)	YES	YES	YES	YES	YES	YES	YES	YES
Project Initiation Document (Chapter 9)	PSR	PSR	PSR	PSR	PSR	PSR	PSR or [5]	PSR or [5]
Initial Public Meeting (Chapter 10 Section 3 and Chapter 22 Section 5)	YES	YES	optional	optional	optional	only if requested	NO	NO
Written Notice of Studies (Chapter 10 Section 3 and Chapter 22 Section 10)	YES	YES	YES	YES	YES	rarely [3]	NO	NO
Initiate Formal Environmental Studies (Chapter 10 Section 3) (EH)	YES	YES	normally [2]	normally [2]	YES	YES	NO	NO
Draft Project Report (Chapter 10 Section 5)	YES	YES	normally [2]	normally [2]	YES	YES	NO	NO
Environmental Document (EH)	YES	YES	normally [2]	normally [2]	YES	YES	NO	NO
Public Hearing (Chapter 11)	YES or opportunity	YES or opportunity	YES [2] or opportunity	normally [2] [4]	YES or opportunity	rarely [4]	NO	NO
Preferred Alternative Selection (Chapter 12 Section 2)	YES	YES	normally [3]	normally [3]	normally [3]	normally [3]	NO	NO
Project Approval Document (Chapter 12)	PR	PR	PR	PR	PR	PR	PR or [6]	PR or [6]
CTC Route Adoption (Chapters 13 and 23)	YES	YES	YES	NO	NO	NO	NO	NO
Freeway Agreement (Chapters 13 and 24)	YES	NO	NO	YES	NO	NO	NO	NO

(Chapter_Section_) = *Project Development Procedures Manual* (EH) = *Environmental Handbook*

See Footnotes on next page.

Footnotes

[1] Formal PDT not required. The determination of significance of environmental impacts and of Project Category will be jointly made by District Project Management, Design, and Environmental Unit.

[2] Not applicable if Categorically or Statutorily Exempt , and/or Categorically Excluded.

[3] Required for projects that present alternatives in an Environmental Document (EIR/EIS or IS/EA).

[4] If no federal Environmental Document is involved, the Project Development Team evaluates and determines the need for a Public Hearing.

[5] The following Project Initiation Documents are applicable, depending on project type or program:

Program	Type Of Project	Document
various	Special Funded, non-complex, > $1M	Combined PSR/PR
HA1	Lands, Buildings, & Facilities Improvement	Facilities PSR
HA4S	Seismic Retrofit	PSSR-Seismic
HA21 / HA22	Bridge/Roadway R&R	PSSR
HA23	Major Damage Restoration	SDR
HA25 / HB32	Highway Planting or Restoration	PSR Data Sheet
HA28	Urban Freeway Off-Pavement Access	PSSR-UFOPA
HB4N	Operational Improvements (TSM projects)	PIR
HB5	HOV Operational Improvements (TSM projects)	PIR
HB6	Rideshare Facilities (TSM projects)	PIR
HB311	Community Noise Abatement	NBSSR

Note: Minor A, Minor B, Capital Preventive Maintenance, and other maintenance projects do not require a Project Initiation Document; therefore, a PR initiates a Minor A, a CAPM PR initiates Capital Preventive Maintenance projects, and an EA PR initiates the Minor B and other non-CAPM maintenance projects.

[6] The following Project Approval Documents are applicable, depending on project type or program:

Program	Type Of Project	Document
– – – – – – –	Encroachment Permit < $1M	PEER
various	Minor B or Maintenance Projects	EA PR
HA22	Capital Preventive Maintenance Projects	CAPM PR
HA25 / HB32	Highway Planting or Restoration	PR-HP&R
HA26 / HB33	Safety Roadside Rest or Restoration	PR-SRR

These Project Initiation Documents are equivalent to a PR if they have the following approved attachments:

Document	Attachments
NBSSR	CE (or ND if necessary) and Noise Study
Combined PSR/PR	Approved ED
PSSR	CE (or ND if necessary)
PSSR-Seismic	CE
PSSR-UFOPA	CE
SDR	CE

[7] Category 7 relates to local projects on local facilities only. (See *Local Programs Manual.*)

FIGURE 2 - Project Initiation and Approval Documents -- According to Program[10]

CMP = State Budget Program Component
PRG = State Budget Program Task (old program)

REPORT TYPES

CAPM PR	Capital Preventive Maintenance Project Report
CPSR/PR	Combined Project Study Report /Project Report
DO	Director's Order
DPR	Draft Project Report
EA PR	Expenditure Authorization Project Report
FPSR	Facility Project Study Report (Lands & Buildings)
NBSSR	Noise Barrier Scope Summary Report
PEER	Permit Engineering Evaluation Report
PIR	Project Information Report
PR	Project Report
PR-HP&R	Project Report - Highway Planting & Restoration
PR-SRRA	Project Report - Safety Roadside Rest Area
PSR	Project Study Report
PSRDS-HP	Project Study Report Data Sheet - Highway Planting
PSRDS-HPR	Project Study Report Data Sheet - Highway Planting Restoration
PSSR-BR	Project Scope Summary Report - Structure Rehabilitation
PSSR-PR	Project Scope Summary Report - Pavement Rehabilitation
PSSR-SR	Project Scope Summary Report - Seismic Retrofit
PSSR-UFOPA	Project Scope Summary Report - Urban Freeway Off-Pavement Access
SDR	Site Damage Report

See Footnotes at end of Section 5.

Projects Authorized in State Programming Documents

State Highway Operation & Protection Plan (SHOPP)				
CMP	PRG	DESCRIPTION	INITIATION	APPROVAL
	HA11	Equipment Facilities	FPSR	PR[4]
	HA12	Maintenance Facilities	FPSR	PR[4]
	HA13	Buildings and Operation Centers	FPSR	PR[4]
	HA21	Bridge Restoration & Replacement	PSSR-BR	PSSR-BR[1]
	HA22	Roadway Reconstruction & Restoration	PSSR-PR	PSSR-BR[1]
	HA22	Capital Preventive Maintenance Projects	CAPM PR	CAPM PR
	HA23	Major Damage Restoration	SDR	SDR
RAS	HA25	Highway Planting Restoration	PSRDS-HPR	PR-HP&R
	HA26	Safety Roadside Rest Area Restoration	PSR	PR-SRRA
	HA27	Urban Freeway Median Barrier Retrofit	PSR	PR
	HA28	Urban Freeway Off Pavement Access	PSSR-UFOPA	PSSR-UFOPA
	HB42	Protective Betterments	PSR[3]	PR[3,4]
	HA4S1	Phase 1 Structures Seismic Retrofit	PSSR-SR	PSSR-SR
	HA4S2	Phase 2 Structures Seismic Retrofit	PSSR-SR	PSSR-SR
	HB1	Safety Improvements	PSR[3]	PR[3,4]
	HB32	Highway Planting	PSRDS-HP	PR-HP&R
	HB33	Safety Roadside Rest Areas	PSR	PR-SRRA
OHC	HB34	Roadside Enhancement (Vista Points)	PSR[3]	PR[3,4]
	HB4N	Operational Improvements (non-capacity increasing)	PSR[3]	PR[3,4]
	HB711	New Curb Ramp (ADA)	PSR	PR
	HB712	Park & Ride Lot (ADA) Modifications	PSR	PR

See Footnotes at end of Section 5.

State Transportation Improvement Program (STIP)				
CMP	PRG	DESCRIPTION	INITIATION	APPROVAL
FCR	HB4N	Operational Improvements (non-capacity increasing)	PSR[3]	PR[3]
	HB4C	Operational Improvements (capacity increasing)	PSR[3]	PR[3,4]
	HB5	HOV Facilities	PSR[3]	PR[3]
	HB6	Transit-Related & Ridesharing Facilities	PSR[3]	PR[3]
IRS	HB4N	Operational Improvements (non-capacity increasing)	PSR[3]	PR[3]
	HB4C	Operational Improvements (capacity increasing)	PSR	PR[4]
	HE11	New Facilities: New Connections & Cross-Traffic Improvements	PSR[3]	PR[3,4]
	HE12	New Facilities: Upgraded Facilities	PSR[3]	PR[3,4]
	HE13	New Facilities: Lane Additions	PSR	PR[4]
	HE14	New Facilities: New Highways	PSR	PR[4]
SW	HB311	Community Noise Attenuation	NBSSR	NBSSR[1,2]

Traffic Systems Management Plan (TSM Plan)				
CMP	PRG	DESCRIPTION	INITIATION	APPROVAL
TSM	HB4N	Operational Improvements (non-capacity increasing)	PIR	PR
	HB5	HOV Facilities	PIR	PR
	HB6	Transit-Related & Ridesharing Facilities	PIR	PR

Toll Bridge Program				
CMP	PRG	DESCRIPTION	INITIATION	APPROVAL
TBF	HA14	Toll Facilities	FPSR	PR[4]
	HA21	Bridge Restoration & Replacement	PSSR-BR	PSSR-BR
	HA4S3	Toll Bridge Seismic Retrofit	PSSR-SR	PSSR-SR
	HB4N	Operational Improvements (non-capacity increasing)	PSR[3]	PR[3]
	HE11	New Facilities: New Connections & Cross-Traffic Improvements	PSR[3]	PR[3,4]
	HE14	New Facilities: New Highways	PSR	PR[4]
	HE201 to HE209	New Toll Bridge Facilities	PSR	PR[4]

See Footnotes at end of Section 5.

Projects Not Authorized in State Programming Documents

Other Caltrans-Funded Projects

PROGRAM	DESCRIPTION	INITIATION	APPROVAL
HM1 to HM5	Maintenance	EA PR	EA PR
All programs	Minor B	EA PR	EA PR[11]
All programs	Minor A	PR	PR
All programs	Emergency or Urgent	DO	DO

100% Locally Funded Projects[8]

DESCRIPTION	INITIATION	APPROVAL
Special Funded Projects[6] that don't meet criteria	PSR[3,9]	PR[3,4]
Special Funded Projects[6] that meet criteria	CPSR/PR	CPSR/PR
Encroachment Permit Projects[7] ($300K or less)	PEER[9]	PEER
Encroachment Permit Projects[7] ($300K to $1M)	PEER[5,9]	PEER[5]

Footnotes

[1] Must have Categorical Exemption or Final Environmental Document attached.

[2] Noise Study must be completed and approved.

[3] Combined PSR/PR could be used if criteria are met.

[4] DPR needed if Draft Environmental Document is prepared by Caltrans.

[5] PEER can be used unless district decides PEER provides inadequate justification and documentation and that a PR is needed. Combined PSR/PR form may be used for PR if criteria are met.

[6] 100 % locally funded projects costing over $1 million within State right of way.

[7] 100 % locally funded projects costing $1 million or less within State right of way.

[8] Jointly funded projects are Projects Authorized in State Programming Documents and are processed in the same manner.

[9] New public road connections: use PSR-New Connection for expressways; use PSR for freeways.

[10] PSR is standard project initiation document. PR is standard project approval document. If the specialized document does not provide adequate coverage, use the standard document.

[11] Traffic-signal projects require cover letter with technical justification, attachments, RE Stamp.

SECTION 6 - Project Alternatives

Need for Alternatives

During the development of all projects, alternatives are considered to the extent necessary to (1) minimize costs and adverse environmental impacts, and to (2) maximize public benefits. In addition, a minimum fundable alternative and stageable alternatives need to be identified (see Chapter 7, Article 2).

Generally, the concept and scope of project alternatives can include location, geometric features, mode, or mix of modes. However, mode or mix of modes should have been determined at an earlier stage, during the system planning process, and only review and documentation of that determination is needed during formal project studies. In addition, some location and geometric variations are not alternatives; instead, they are design variations.

Discussing project alternatives with community groups is an effective way to gain an improved understanding of the goals and objectives of various community interests. It can assist in determining which alternatives have the greatest potential for successful implementation.

Value analysis is the preferred method of developing alternatives, using a systematic application of analytical techniques to identify a project's function, identify alternatives, and analyze alternatives to identify the one that fully meets the project's function at the lowest overall cost.

Least Environmental Damage

It is Caltrans' policy to evaluate alternative solutions that reduce or avoid adverse environmental impacts, and to select the alternative that causes the least environmental damage while still accomplishing the transportation need.

Most Projects Have no Significant Impacts

Most projects do not have potential significant environmental impacts, thus no formal consideration of alternatives is needed. This would generally include traffic system management and rehabilitation projects, and other projects with minor impacts and little controversy. For these cases, project alternatives are considered on an informal basis; and are not required to be addressed in the project's environmental documentation. Viable alternatives would however, be discussed in the Project Report (PR) and the reason given for selecting the Preferred Alternative.

Thorough Study of Alternatives

Alternatives that are studied in detail, either formally or informally, must comply with legal and administrative requirements and must be technically and economically feasible. The depth of studies should be consistent with the scale of the proposed project and the significance of the project impacts. Additionally, the studies should reflect the need for permits and formal consultations with other agencies. They should also reflect the degree of community involvement.

Environmental Review Requirements

The consideration of alternatives must be consistent with the environmental review requirements. Project delivery frequently depends on the skill with which compliance with these laws is obtained. Therefore, it is important for the PDT and the Project Manager to have a general knowledge of applicable environmental laws.

Full Range of Alternatives

When environmental laws require the formal consideration of alternatives within the environmental document, the full range of options are to be addressed. The document must list specific objectives outlining the project's "Need and Purpose," and the reasons why certain alternatives did not meet these objectives and were consequently set aside. All significant adverse effects of each reasonable alternative must be identified. For each such effect, all reasonable mitigation measures must also be identified. The environmental document provides a record of the decision-making process.

Formal Consideration of Alternatives

Alternatives must be formally considered within the environmental review process under any of the following circumstances:

- When an EIS or EIR is prepared
- When an adverse impact is expected on any of the following protected resources:
  - Endangered species
  - Public parks, recreation areas, or wildlife and waterfowl refuges
  - Historic sites
  - Aquatic ecosystems, including wetlands
  - Farmlands or Agricultural Preserves
  - Floodplains
- When a hazardous waste site is expected to be impacted

The Project Development Team (PDT) may find it most expedient to propose a project alternative that would avoid these circumstances. Conversely, there are situations where due to the public controversy surrounding a project, or due to a project's high public profile, the PDT may appropriately elect to address project alternatives in a formal manner — even though not required.

Defensible Alternative Selection Process

If project alternatives are formally considered, it is extremely important to embark upon a systematic and defensible alternative-selection process. It has been shown time and again that a quality process from the outset, carefully targeted to the community, will save delivery time and money and result in a better end-product.

Consider the following key points during this process:

- Early Identification of Impacts — the need for early identification of significant environmental impacts, uses of protected resources, and impacts on hazardous wastes.

- Project "Need and Purpose" — the need to develop a thorough and accurate description of the project's "Need and Purpose."

- Funding — Alternatives must take into account the flexible funding that is available for congestion relief projects.

- Close Cooperation — the project's engineering, environmental, and transportation planning staffs must work together as a team. This is best accomplished with frequent, informal interaction.

- Decision Maker — the preparer of the environmental document does not determine if the project is to proceed; that is the jurisdiction of the District Director or designee. The environmental document identifies the project's "pluses and minuses." As such, it can be used by the District Director as an informational tool that will help in making an informed project decision.

SECTION 7 - Topics to Consider During Project Development

Introduction

During the Project Development process there are many issues to consider. The following Chapters in Part 2 (7 through 15) give a chronological description of most items that may need consideration. Other topics that relate to the entire project development process, but are difficult to describe chronologically, are covered in this section and in Part 3. Part 3 topics describe policies that are specialized topics or reach beyond the considerations of a single project, such as topics of general application by project development personnel even if a project is not involved, or topics that apply to locations or limits that are not the same as those of a particular project.

This section provides information on topics that may affect specific projects throughout the project development process, and if overlooked may cause significant fiscal and scheduling problems. These topics need to be identified at the project initiation stage and incorporated into the proposed project as appropriate, with documentation as needed in the project initiation and approval documents.

Right of Way Considerations

Right of way issues can significantly affect the development, scope and cost of a project. If overlooked, right of way issues can delay or seriously impact the project schedule.

Relocation Impact Studies

Relocation Impact documents are prepared in accordance with the procedures outlined in Section 10.05 of the *Right of Way Manual.* These studies are required on all projects that displace any person or business. A Final Relocation Impact Study/Statement (FRIS) will be completed for the Preferred Alternative so that necessary revisions may be included in the Final Environmental Document.

Relocation Impact Studies are often complex and time-consuming; therefore, requests for the studies should be submitted to the District Right of Way Branch as early in the project development process as possible. This is particularly important if "Last Resort Housing" or "replacement of affordable housing" are involved. The importance of submitting good mapping and other base data to the District Right of Way Branch cannot be overemphasized. The quality of the information submitted directly relates to the validity of right of way impact studies.

Airspace Lease Areas

Streets and Highways Code Section 104.12(b) requires Caltrans to consider future lease potential of areas above or below a State Highway whenever planning a project. The Project Development Team should determine whether the proposed project is in an area of high land values having potential for future airspace leases.

If so, and if the geometric plan can accommodate or can be modified to accommodate airspace leases, the District Airspace Committee is requested to review the appropriateness of incorporating such provisions into the project.

Where the District Airspace Committee has determined that provision for future airspace leases is appropriate, the involved local agency is contacted to ascertain compatibility with local land-use plans and the agency's willingness to make a financial commitment for any added costs. Unless airspace lease provisions are required to mitigate project impacts, any added costs must be borne by others (either public or private sources).

Right of Way Cost Data

Right of way cost estimates and parcel data are prepared in accordance with the *Right of Way Manual.* The Right of Way Data Sheet (See Appendix JJ) is used by the District Right of Way Branch to provide this information when requested.

Development of right of way cost estimates are often complex and time consuming, so requests for such should be submitted to the District Right of Way Branch as early in the project development process as possible. Good mapping and other base data provided by Design are important as their quality directly impacts the validity of the right of way cost estimates which are a component of the project cost estimate as described in Appendix AA.

Railroad Involvement

It is the Design Unit's responsibility to provide the District Right of Way Branch with approximate geometric maps, profiles, and cross sections for the purpose of determining railroad involvement and for use in subsequent negotiations, as necessary. Refer to Chapter 3, Sections 3 and 8.

Utility Involvement

It is the Design Unit's responsibility to provide the District Right of Way Branch with approximate geometric maps, profiles, and cross sections for the purpose of determining utility involvement and use in subsequent negotiations, as necessary. Refer to Chapter 3, Section 13.

Any exceptions to Caltrans' policy on encroachments must be submitted to the Design and Local Programs Program (DLPP) Program Manager, Attention: Encroachment Exceptions for approval. For more information, see Chapter 17, "Encroachments in Caltrans' Right of Way".

Responsibilities of Utility Companies and Other Owners

A preliminary determination of the financial responsibilities of utility companies and other owners is needed to prepare a good estimate of State costs. Owners of non-Caltrans facilities located within the highway right of way may be required to participate in any relocation, reconstruction, or improvements required by proposed highway improvements.

At a very early stage in the project studies, a thorough investigation is made of all affected facilities to determine ownership. Particular attention should be paid to

water carrying facilities, as they may appear to be highway related facilities, but may actually belong to an irrigation or reclamation district or may be part of a State Water Project. These facilities may have been installed under permit, which requires owner participation in subsequent modifications. The above investigations should reveal ownership, prior rights, permit obligations, etc.

State funds are not used to pay for obligations that have been incurred by others as a condition for placement of their facilities within Caltrans right of way.

- Public Utility Owned Facilities

  Public utility facilities, both publicly and privately owned, that are to be constructed as a part of a transportation project, require a determination of liability. The determination is prepared by the District Right of Way Branch and approved by the Headquarters Right of Way Program, prior to submittal of PS&E to the Headquarters Office of Office Engineer. The public utility company is notified to relocate their facilities by the district after this approval is given. Refer to Chapter 13 of the *Right of Way Manual* for details.

- Non-Utility Facilities

  – Non-Common Carrier Facilities

    Non-utility facilities (i.e., non-common carrier oil company pipelines) also require a determination of liability as described above.

  – Sidewalks

    Financial responsibility for construction of sidewalks is established in accordance with Index 105.1 of the *Highway Design Manual*. Also see Section 13.03 of the *Maintenance Manual.*

  – Private Access Openings

    Revisions to private access openings (such as driveways and road approaches) are covered in Chapter 26 of this manual and in Index 205.5 of the *Highway Design Manual*. For owner-initiated openings, see Section 25.02.6 of the *Maintenance Manual.*

  – Mailboxes

    Movement of mailboxes is at State expense, per Section 6-15 of the *Construction Manual.* Also see Section 25.02.8 of the *Maintenance Manual.*

Traffic Operation Considerations

HOV (Bus and Carpool) Lanes

Caltrans policy (refer to the *High Occupancy Vehicle (HOV) Guidelines* for more information) requires consideration of an HOV lane alternative for all capacity additions to metropolitan freeways or new metropolitan freeways, and to recommend HOV preferential lanes at ramp meters where appropriate. Districts with major metropolitan areas work with the Regional Transportation Planning Agencies to develop a regionwide HOV lane system, and these systems are included in the regional transportation plans by the regional agencies, providing the basis for programming HOV lane projects.

Depending on such factors as transportation demand, travel time, cost, safety considerations, maintenance considerations, enforcement requirements, funding availability, environmental considerations, and community support, the specific HOV design and operational features considered in project planning will vary. Since the goal is to optimize the people-carrying capability of the HOV lanes, transit should be given preference, with vanpooling following and then carpooling. Proposals for lane additions and new facilities should be analyzed for mixed-flow and HOV operation to identify the alternative that will ultimately result in less overall person delay or the most increase in person carrying capacity. Separate roadways for HOVs should be considered when travel demand, cost-effectiveness and operational needs justify those facilities. Convertibility to rail is required under certain conditions when a new alignment or new structures are proposed.

Section 21655.6 of the Vehicle Code states that approval by the affected transportation planning agency or county transportation commission must be obtained before Caltrans may implement exclusive or preferential use of highway lanes for high-occupancy vehicles. Section 21655.5 of the Vehicle Code and Section 149 of the Streets and Highways Code states that Caltrans, prior to constructing or establishing bus and carpool lanes, shall conduct competent engineering estimates of the effect of such lanes on safety, congestion, and highway capacity.

When considering HOV lanes it is important for the Project Manager or the Project Engineer to consider the need to seek support from local legislators, the public and local governments, and for coordination with the California Highway Patrol concerning operation and enforcement.

The *HOV Guidelines* should be consulted for more detailed information on policy and on planning, operations, geometric design, ingress and egress, signing and delineation, and enforcement. Appendix B of the *HOV Guidelines* contains a sample table which should be used to summarize the analysis of the congestion, capacity and safety ramifications of the alternatives for inclusion in the DPR and PR.

Park-and-Ride Facilities

Park and Ride facilities must be considered for inclusion on all major transportation construction projects that include, but are not limited to, new freeways, interchange modifications, lane additions, transit facilities, and HOV lanes. Section 146.5 of

the Streets and Highways Code contains specific legal requirements regarding the selection and funding of these facilities. It is important to consider Park and Ride facilities before setting right of way lines. The District Park and Ride Coordinator must be consulted as to the appropriateness of including Park and Ride facilities and for assistance in documenting compliance with the legal requirements in the project initiation and project approval documents. Full justification is required for proposals that are contrary to the Park and Ride Coordinator's recommendations.

Park and Ride facilities are not permitted within interchange areas except with the review and approval from the PD Coordinator and the Traffic Liaison Engineer. Generally, these locations will be approved only if no other area is acceptable or economically justifiable.

Additional information on Park and Ride facilities can be obtained from the Headquarters Park and Ride Coordinator through the Traffic Liaison Engineer in the HQ Traffic Operations Program. For the design of complex park and ride facilities and specific planting or erosion control requirements, consult with the District Landscape Architect.

Transit Related Facilities

Transit related highway facilities, including bus turn-outs, passenger loading areas, passenger benches and shelters, and special traffic control devices, should be considered where appropriate. Section 148 of the Streets and Highways Code contains specific requirements concerning these facilities.

Transportation Management Plans

Transportation Management Plans (TMP), formerly called "traffic management plans", are required for all reconstruction, rehabilitation, and other projects (including projects on the State highway System not funded by the State), if significant traffic delays are anticipated. "Significant traffic delay" is any additional delay beyond the existing conditions normally experienced by travelers through the traffic corridor as determined by the District Traffic Engineer. Determination of "significance" should be made on a project-by-project basis. Factors involved in this decision should include: (1) cost-effectiveness, (2) safety, (3) public reaction, (4) expected delays, (5) availability of detours and alternate routes, and (6) duration of project. In general, a TMP is needed if construction work on an existing roadway already experiencing recurrent delays causes a significant increase in recurrent delays over an extended period of time. Some TMPs might be complex; others may be very simple, with one or two activities added to the traditional traffic-handling practices.

Additional information on TMPs can be obtained from the Headquarters TMP Coordinator through the Traffic Liaison Engineer in the HQ Traffic Operations Program, or by reference to the *Transportation Management Plan Guidelines*.

Prolonged Ramp Closures

Temporary ramp closures of more than 10 consecutive days require preparation of an economic impact study by the Environmental Unit. Closures of less than 10 days may require a study, depending upon circumstance. Refer to Volume 4 of the *Environmental Handbook* for further information.

Accommodation of Oversize Loads

In accordance with policy, State freeways must be designed to provide passage for vehicles of unrestricted height while moving in and out of the area; to or from airports, harbors, and testing sites; and to or from ultimate destination for use or assembly. Exceptions to this policy should only be considered when an existing city or county facility allows for bypass of a State facility that has restrictions preventing passage of overheight vehicles.

In those instances where it is impractical to follow this policy due to engineering controls, excessive costs, or community values considerations, the impacted industries should be contacted and a mutually satisfactory solution sought. Impacted industries are those presently engaged in manufacturing of extralegal-dimensioned articles or those industries who have notified Caltrans of their potential for such activity. (Aerospace represents a significant portion of the impacted industries.)

Refer to Chapter 21, Section 2, of this manual for a discussion of the Department of Defense 42 000 km Priority Network of selected Interstate system routes for which a 4.9 m minimum vertical clearance is required.

Miscellaneous Considerations

Access to Navigable Waterways

Section 84.5 of the Streets and Highways Code requires consideration of the feasibility of providing a means of public access to any navigable river over which a new bridge is being constructed. The term "navigable river" is construed to mean any body of water that will require a U.S. Coast Guard permit to cross over.

It is necessary to discuss this subject at any public hearing and to justify and document the position taken on public access to waterways in the project approval document. All environmental and engineering aspects must be considered as well as the intent of the Legislature. The potential for this item should be considered in the project initiation document.

Section 147 of the 1976 Federal Aid Highway Act provides that certain federal funds (NHS, STP and CMAQ under ISTEA; see Chapter 4, Article 4) may be used to construct access ramps to public boat launching areas in conjunction with bridge projects on these systems. In addition, it is not the intention of Section 147 to provide an extended roadway system within publicly owned recreation areas, but rather to provide direct access from the highway right-of-way to the water traversed by such highway

Floodplains

Identify and discuss any impacts on or encroachment on base (100 year) floodplains. The Project Engineer is responsible for initiating the floodplain evaluation process. For further guidelines, consult the *Environmental Handbook* and the *Highway Design Manual*, Topic 804.

National Pollutant Discharge Elimination System

Projects must be evaluated by the PE to determine if a permit for storm water discharge is required. Projects advertised by Caltrans having construction activities of two hectares or more of disturbed soil are required to either obtain an individual permit, or file for coverage under the general National Pollutant Discharge Elimination System (NPDES) permit which has been issued by the State Water Resources Control Board (SWRCB). For any project that requires a general permit, a Notice of Intent (NOI) must be filed with the SWRCB along with the appropriate filing fee.

Some districts have negotiated an individual permit with a Regional Water Quality Control Board in their area. Projects located in these areas must follow procedures specified in the individual permit, and the district has the responsibility of coordinating with the Regional Board.

A copy of the NPDES permit and NOI, if required, must be included in the PS&E package submitted to Office Engineer before the project can be advertised.

The memoranda, subject: "Instructions for Compliance with Construction Storm Water National Pollutant Discharge Elimination System Permits" dated September 15, 1992, and "Storm Water Pollution Management for Construction Activities" dated December 16, 1992, should be consulted for further information on procedures for obtaining NPDES Construction Permits. For the most current information, contact the District Stormwater Coordinator.

Use of Asphalt Concrete Grindings, Chunks and Pieces

Section 5650 of the Fish and Game Code states that it is unlawful to deposit asphalt, other petroleum products, or any material deleterious to fish, plant life, or bird life where they can pass into the waters of the State. In addition, Section 1601 of the Fish and Game Code requires notification to the California Department of Fish and Game (DFG) prior to construction of a project that will result in the disposal or deposition of debris, waste or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the DFG. When constructing transportation facilities, Caltrans frequently uses asphalt in mixed or combined materials such as asphalt concrete (AC) pavement. Caltrans also uses recycled AC grindings and chunks. There is a potential for these materials to reach the waters of the State through erosion or inappropriate placement during construction.

The first step is to determine whether there are waters of the State in proximity to the project that could be affected by the reuse of AC. Waters of the State include: (1) perennial rivers, streams or lakes that flow or contain water continuously for all or most of the year; or (2) intermittent lakes that contain water from time to time or intermittent rivers or streams that flow from time to time, stopping and starting at intervals, and may disappear and reappear. Ephemeral streams, which are generally exempt under provisions developed by Caltrans and DFG, are those that flow only in direct response to rainfall.

The reuse of AC pavement grindings will normally be consistent with the Fish and Game Code and not require a 1601 Agreement when these materials are placed where they cannot enter the waters of the State. However, there are no set rules as

to distances and circumstances applicable to the placement of asphaltic materials. Placement decisions must be made on case-by-case basis, so that such materials will be placed far enough away from the waters of the State to prevent weather (erosion) or maintenance operations from dislodging the material into State waters. Site-specific factors (i.e., steep slopes) should be given special care. Generally, when AC pavement grindings are being considered for placement where there is a potential for problems, DFG should be notified to assist in determining whether a 1601 Agreement is appropriate and what mitigation strategies are available to prevent the materials from entering the waters of the State. When in doubt, it is recommended that the DFG be notified.

If there is the potential for reused AC materials to reach waters of the State through erosion or other means during construction, such work would normally require a 1601 Agreement. Depending on the circumstances, the following measures should be taken:

- The reuse of AC pavement grindings as fill material and shoulder backing must conform to the Caltrans Standard Specifications, applicable manuals of instruction, contract provisions and the MOU described below.

- AC chunks and pieces in embankments must be placed above the water table and covered by at least one foot of material.

A Memorandum of Understanding (MOU) dated January 12, 1993, outlines the interim agreement between the DFG and Caltrans regarding the use of asphaltic materials. This MOU provides a working agreement to facilitate Caltrans' continued use of asphaltic materials and avoid potential conflicts with the Fish and Game Code by describing conditions where use of asphalt road construction material by Caltrans would not conflict with the Fish and Game Code.

Specific Understandings contained in the MOU are:

- Asphalt Use in Embankments

  Caltrans may use AC chunks and pieces in embankments when these materials are placed where they will not enter the waters of the State.

- Use of AC Pavement Grindings as Shoulder Backing

  Caltrans may use AC pavement grindings as road shoulder backing when these materials are placed where they will not enter the waters of the State.

- Streambed Alteration Agreements

  Caltrans will notify the DFG pursuant to Section 1601 of the Fish and Game Code when a project involving the use of asphaltic materials or crumbled, flaked, or ground pavement will alter or result in the deposition of pavement material into a river, stream, or lake designated by the DFG. When the proposed activity incorporates the agreements reached under Section 1601 of the Fish and Game Code, and is

consistent with Section 5650 of the Fish and Game Code and this MOU, the DFG will agree to the use of these materials.

There may be circumstances where agreement between the DFG and Caltrans cannot be reached. Should the two agencies reach an impasse, the agencies enter into a binding arbitration process outlined in Section 1601 of the Fish and Game Code. However, keep in mind that this arbitration process does not exempt Caltrans from complying with the provisions of the Fish and Game Code. Also it should be noted that this process is time consuming, requiring as much as 72 days or more to complete. Negotiations over the placement of AC grindings, chunks and pieces are to take place at the District level as part of the 1601 Agreement process.

Interim Projects

Interim projects are subject to CTC policies. An interim project is any project on or improvement to an existing State highway which is planned to be superseded by construction of a new freeway facility, during the period of time between adoption of a freeway alignment and completion of the freeway construction (and subsequent relinquishment of the existing highway).

- CTC Policy:

  The current CTC policy resolution, adopted by the California Highway Commission on July 30, 1964, sets forth the following responsibilities on interim projects:

" A. Basic Responsibility for all Projects

1. The correction of drainage conditions that are clearly local problems shall be the responsibility of the local agency.

2. The financing of all new curbs and gutters, exclusive of those required for channelization, shall be the responsibility of the local agency.

3. The State shall be responsible for maintaining the structural adequacy of the facility.

B. Interim Projects Estimated to Serve all Traffic for a Minimum Period of Five Years

The State shall be responsible, subject to limitations in item A, for financing the construction of necessary highway widening (including replacement of existing curbs and gutters and the addition of channelization) and for the cost of right of way acquisition.

C. Interim Projects Estimated to Serve all Traffic for a Period of Less Than Five Years

1. For projects that will be under construction prior to budgeting of the freeway project, in addition to A, the purchase of necessary additional rights of way, and construction of new curbs and gutters shall be the responsibility of the local agency. Replacement of existing curbs and gutters will be by the State.

2. When the freeway project has been budgeted, the local agencies shall provide 50 percent of all other construction costs for State highway widening in addition to those items previously ascribed to them.

3. After the freeway is opened for traffic, State responsibility shall be limited to placing the existing highway surface in a state of good repair.

... nothing ... will preclude financial participation by local agencies in excess of the amounts indicated ... the Commission will consider variations from this policy ..."

- Implementation

  – Widening Criteria

  Implementation of the Interim Projects policy should be based on State participation only to the extent of meeting traffic requirements within the interim time period. Extra width of roadbed for medians or for pavement in excess of that needed for such traffic, etc., should be financed entirely by the local agency.

  Exceptions to the policy require CTC approval. Justification for extra width at State expense must be contained in the PR. It is expected that the local agency's request for an exception will normally be in the form of a resolution. DLPP will handle the processing to the CTC.

  – Relinquishment

  Section 73 of the Streets and Highways , governs the relinquishment of the interim facility after the freeway is open to traffic. It requires that highways, as defined in Section 23 of the Code, be placed in a state of good repair prior to relinquishment for routes superseded by relocation. The section also specifies that Caltrans is not obligated for widening, new construction, or major reconstruction, except as the CTC may direct. (See Chapter 25 of this manual for discussion of relinquishment policies and procedures.)

  – Traffic Signals and Intersection Lighting

  The modification of existing traffic signals, intersection lighting, and channelization required by the freeway will be at State expense.

  Local participation will be sought on the cost of new signals and lighting systems on the existing highway on the basis of the number of legs under each jurisdiction entering the intersection. If a new traffic signal or illumination system, or modification to an existing signal, signal system, or illumination system is

urgently needed to improve safety of traffic flow on the State highway, and if local authorities are unable to finance their proper share of the cost, the State may accept a lesser participation (or even no participation) by local authorities. The determination of "urgently needed" will be made by the District Director.

Construction of traffic signal systems must begin before the freeway is open to traffic. After the freeway is opened, it will be necessary to obtain advance approval from the CTC for a variance from the policy resolution. If signals are to be in operation less than 12 months before the freeway is opened, traffic signal warrants (see Chapter 9 of the *Traffic Manual*) must continue to be met after the freeway has been opened to traffic.

Widening Adjacent to Existing Facilities

On widening projects such as lane additions, auxiliary lanes, uphill climbing or passing lanes, etc., it is necessary to thoroughly investigate the existing adjacent pavement condition for rehabilitation need. It is not cost-effective or desirable to widen a highway without correcting for bad ride and major structural problems in adjacent pavements if that work is needed. However, certain circumstances may justify deferring the pavement rehabilitation work and programming it as a separate project in the State Highway Operation and Protection Program (SHOPP). If it is believed such circumstances exist, the PD Coordinator should be consulted to discuss deferring the pavement rehabilitation work. Possible options to consider are: widening only - rehabilitation not needed; widening concurrent with pavement rehabilitation; widening with deferred pavement rehabilitation only; and stage construction.

A review of the current Pavement Management System Inventory and Report Data in conjunction with a field review of the widening project must be made to determine if pavement rehabilitation is needed in conjunction with the widening. This should be done during the project initiation phase and then reviewed again during the Draft PR stage because the pavement condition may have deteriorated during the intervening time.

For asphalt concrete (AC) pavements exhibiting alligator "B" cracking, a deflection study is needed to confirm rehabilitation need and the appropriate pavement rehabilitation strategy. (Refer to Chapter 7, Article 5.) If the deflection study supports rehabilitation, the appropriate strategy and cost of rehabilitation and other project considerations, such as traffic safety needs, must be included in the project and discussed in the project development report (i.e. PSR, DPR, PR, etc.) unless deferred.

When widening contiguous to portland cement concrete (PCC) pavement, if the PMS survey data and field review indicate rehabilitation of the PCC is not an immediate need but will be necessary within ten years, then widening should be done with AC for compatibility with the eventual PCC pavement rehabilitation strategy which typically is a 105 mm AC overlay. If the PMS survey data and field review indicate that rehabilitation will not be needed within ten years, a PCC pavement structural section should be used to widen the existing PCC pavement.

Converting Shoulders to Traffic Lanes

Converting shoulders to a traffic lane (or portion) should only be undertaken when it is the last available means to provide increased capacity and should be done in consultation with the PD Coordinator. The preferred solution is permanent widening in accordance with the design standards in the *Highway Design Manual* (HDM).

Once a decision has been made to convert an existing shoulder (typically asphalt concrete) to a traffic lane (or portion) a deflection study must be made to determine the structural adequacy of the in-place material. A field review should also be performed to evaluate the condition of the asphalt concrete for signs that indicate it will provide poor ride quality or require excessive maintenance and rehabilitation in a short period of time (i.e.: has it become brittle and surface cracked; does it undulate in grade; is it raveling; is it rolled up at the PCC joint; etc.?). See HDM Indices 607.4, 607.5 and 608.5 for further shoulder structural section design information.

In addition, the need to modify adjacent landscape features should be determined by field review and study of as-built drawings. Consideration should also be given to maintenance of the roadside and how the conversion affects the safety of maintenance personnel.

Safety

- Safety Reviews

  A formal safety review must be initiated on all urban freeway projects and other major projects during the concept and scope development process, to ensure that design features that limit the exposure of employees and the traveling public to traffic are appropriately considered on all projects. All projects must be reviewed by the District Safety Review Committee prior to the approval of the PSR. Safety concepts identified during the review process, that limit the exposure of employees to traffic, must be incorporated into the project unless deletion is substantiated, documented, and approved by the District Director. Refer to Index 110.7 of the *Highway Design Manual* for more discussion of Safety Reviews.

- Field Safety

  Safety is a critical concern for all Caltrans operations. The need for the project development team to conduct field reviews as an ongoing activity has been emphasized. The *Safety Manual*, Chapter 9, Safe Working Practices, should be consulted for an explanation of safe working procedures for employees who normally work in offices and are unfamiliar with Caltrans field work activities.

  Project planning and design actions also have a significant impact on the safety of required field efforts, such as Surveys. Requests for field-determined data should be made after considering the safety aspect and alternate means of obtaining the data. As an example, pavement

elevations surveys expose surveyors to traffic and, at times, require lane closures. Although techniques are available to improve the safety of pavement elevation surveys, the best solution is to eliminate, when feasible, the need for field surveys. Improved photogrammetry equipment and techniques provide opportunities to achieve this goal and reduce the demand for field-determined pavement elevation surveys. Not only can the use of photogrammetry eliminate the need for field surveys, it also (a) reduces the survey costs, (b) avoids the creation of traffic congestion resulting from field surveys with required lane closures, and (c) eliminates the need to consider night surveys.

Although photogrammetric elevations may be inadequate for many project planning and design situations, each reduction in the need for field surveys reduces the exposure of surveyors to traffic and improves safety. For additional information on pavement elevation surveys, refer to the *Surveys Manual* supplement entitled "Pavement Elevation Surveys".

Project Size (Dollar Value)

The basic objective in establishing the size (dollar value and kilometer post limits) of any project is to obtain the maximum service to public traffic at the earliest feasible date and at a minimum cost. Some reasons for developing large projects include: (1) economic balance of earthwork; (2) provision of a usable segment or segments that can be opened to traffic upon completion; (3) cost effective and safe handling of traffic through or around construction; (4) minimizing the time and costs of project development and construction engineering; (5) keeping the unit cost and overall project cost down; and (6) avoiding conflict between adjacent contractors.

There are, however, offsetting reasons for maintaining a balance of small, medium, and large projects. These include: (1) encouraging competitive bidding by enabling small, medium, and large contractors to compete for projects; (2) providing opportunities for small businesses, including those owned by minorities and women; and (3) maintaining a viable highway contracting industry in California.

Another reason for maintaining a balance of project sizes is to take advantage of stage construction. Stage construction can result in earlier completion of a project and, under certain circumstances, more effectively utilize available funding. Examples where stage construction may be appropriate: (1) during embankment settlement periods, (2) for railroad separations, (3) for major stream crossings, and (4) for interchanges in urban areas in advance of major projects to minimize later interference with local and contractor's traffic. Breaking a large project into shorter segments should be considered whenever the earthwork balance can be maintained and where temporary transition problems are minor between staged segments.